NOISE ELEMENT

INTRODUCTION

Government Code section 65302(f) requires cities and counties to adopt a noise element:

which shall identify and appraise noise problems in the community. The noise element shall recognize the guidelines established by the Office of Noise Control in the State Department of Health Services and shall analyze and quantify, to the extent practical,...current and projected noise levels for...

(1) Highways and freeways.
(2) Primary arterials and major local streets.
(3) ...Railroad operations...
(4) Commercial, general aviation, heliport,... and...other...functions related to airport operation.
(5) Local industrial plants...
(6) Other ground stationary noise sources...

Noise contours shall be shown for all of these sources and stated in terms of community noise equivalent level (CNEL) or day-night average level (Ldn). The noise contours shall be prepared on the basis of noise monitoring or...modeling techniques...

The noise contours shall be used as a guide for... land uses in the land use element that minimizes the exposure of community residents to excessive noise.

The noise element shall include implementation measures and possible solutions that address existing and foreseeable noise problems, if any. The adopted noise element shall serve as a guideline for compliance with the state's noise insulation standards.

GOALS

I) Identification of existing and projected noise levels in the City so that noise may be considered in the land use element and zoning ordinance.

II) Identification of existing noise-sensitive areas in the City for protection from future noise-generating development.

III) Identification of existing noise-generating areas for protection from future noise-sensitive new development.

IV) Definition of the community noise environment and the development of noise level contours to determine and facilitate compliance with State Noise Insulation Standards.

V) Protect City residents from excessive noise levels.

POLICIES/IMPLEMENTATION MEASURES

A) The City shall monitor community noise levels.
IMPLEMENTATION MEASURE: City shall appoint a noise officer to monitor noise levels, receive and process complaints from City residents, and recommend noise-reducing mitigation measures to existing and future noise-generating development.

B) The City shall enforce noise-related laws.
IMPLEMENTATION MEASURE: City shall adopt a noise ordinance after review of State guidelines and "model" ordinance.

C) The City shall regulate future development to reduce the impacts of undesirable noise levels
IMPLEMENTATION MEASURE: City shall adopt and comply with State Noise Insulation Standards, as contained in Title 25, Article 4 of the California Administrative Code.

D) The City shall consider noise impacts of all City actions.
IMPLEMENTATION MEASURE: City shall assess the noise-generating impact of its actions, especially road development and industrial development, prior to approval of the actions.

E) The City shall consider the community noise environment in the development of land use and zoning standards.
IMPLEMENTATION MEASURE: City shall develop a noise overlay zoning procedure during the next revision of the City zoning ordinance.

PLANNING AND THE NOISE ELEMENT

The Government Code mandates that the noise element "recognize the guidelines established by the Office of Noise Control". The Guidelines essentially recommend the following procedure:

1) Define the noise environment by the development of noise contours.
2) Noise compatible land use planning.
3) Mitigate excessive noise.
4) Enforcement of local noise standards.

CURRENT COMMUNITY NOISE ENVIRONMENT

The City of Weed is a small, rural community. Land use consists primarily of residential, retail commercial, and public and private transportation corridors. Major noise producers such as large industrial plants, major freeways, and active freight and passenger railroad are present in the planning area.

The two major noise sources in the City are the Southern Pacific Railroad, Interstate Highway 5, and State Highway 97. All three sources generally bisect the City in a north/south trending fashion. SP train tracks and highway 5 are generally close and parallel to each other.

In addition, the Morgan and Roseburg wood processing industrial plants, while located out of the City limits, do affect the City noise environment. However, only the veneer plant of the Roseburg operation contributes substantial noise to the planning area.

SOUTHERN PACIFIC RAILROAD

Southern Pacific Railroad freight trains pass through the City 4 times per day: 2 day and 2 night operations on the Weed- Montague- Oregon line. In determining noise levels it is necessary to determine the equivalent number of on-line rail operations to account for effects of noise during the day and at night.

Equivalent number of on-line operations may be expressed utilizing the following formula developed by the State Department of Health Services Office of Noise Control:

$$N = n(d) + 10(n(n))$$

where: N = equivalent number of operations
$n(d)$ = number of operations between 7AM and 10PM
$n(n)$ = number of operations between 10PM and 7AM.

The equivalent number of on-line railroad operations in Weed is 22 (2 + 2(10)).

This equivalent number of rail operations was utilized in the Siskiyou County Noise Element to develop the information contained in Appendix N-5 and the noise contours contained in Appendix N-2.

For more detailed information on the development of noise contours in the planning area see Noise Appendix N-1.

HIGHWAYS 5 AND 97

Utilizing traffic counts obtained from CALTRANS, diesel trucks percentage of total traffic from the Agricultural Inspection Stations in Dorris and Hornbrook, an average speed assumption of 60 MPH, and nomographs included as Appendices N-3 and N-4, noise contours of the noise levels from Interstate 5 and Highway 97 can be determined. The contours in Appendix N-2 have been developed from the information contained in the nomographs in Appendices N-3 and N-4.

For more detailed information on the development of noise contours in the planning area see Appendix N-1.

NOISE SENSITIVE LOCATIONS:

There are 7 noise sensitive locations in the planning area: 1 convalescent home, 3 parks, and 3 schools. Appendix N-2 provides the locations of these noise sensitive areas.

PROJECTED COMMUNITY NOISE ENVIRONMENT

The projected community noise environment in the 1995-2000 year time frame is quite difficult to determine. Southern Pacific rail operations, while constant for the past 8 years, are impossible to predict. In addition, increases in traffic volumes on the highways are difficult to predict. CALTRANS states that a good "rule of thumb" is a 5% annual growth rate in traffic volumes. However, during the last 15 years this projected growth rate has varied greatly and the next 15 years may approximate the past 15 years.

Since the future levels of activity for the two major noise producers in the planning area, SP railroad and CALTRANS highways, cannot be accurately predicted, projected noise levels are not included in this element.

COMMUNITY NOISE ENVIRONMENT AND LAND USE

The location of noise contours is used to determine the noise levels in various locations in the planning area. Knowledge of the noise levels in the planning area is essential in the development of sound land use planning. With this knowledge, planners can protect the activities of noise producers and noise sensitive uses by proper site location and/or building standards.

Two specific measures that can be implemented are noise area overlay zoning and building standards for construction in noise areas. Overlay zoning would generally prohibit certain activities from noise areas or the locating of noise producers in non-noise areas. Building standards designed to reduce noise levels can be incorporated into the City building permit procedure.

Appendix N-6 contains standards for the location of various activities in different outdoor noise environments. Appendix N-7 contains standards for indoor noise levels.

State law (Administrative Code, Title 25, Article 4) makes the following requirements of all multi-family construction to insulate building interiors from exterior noise sources:

1) Location and orientation of multi-unit dwellings that will be located in critical noise areas, such as proximity to railroads or industrial areas, shall be designed to prevent the intrusion of exterior noises beyond prescribed levels with all exterior doors and windows closed. Proper design shall include any or all of the following at a minimum: orientation of the structure(s), set-backs, shielding, and building sound insulation. In addition, an acoustical analysis shall be conducted when construction is proposed along freeways, railroads, or industrial sources.

2) Interior noise levels in any habitable room shall not exceed a CNEL of 45 db.

3) Noise insulation is required if the dwelling is constructed within the 60 db(A) contour.

Since most residential structures have the capability of reducing noise levels by approximately 20 db(A) with standard construction techniques, the 45 db maximum interior noise level can be achieved in any zone that has noise levels 65 db(A) or less. In areas with noise levels exceeding 65 db(A), additional noise reduction techniques such as insulation, dual-pane windows, or shields should be required of the building developer.

The State Office of Noise Control has developed a "model" noise ordinance which communities can use to develop a local noise ordinance. Included in the noise ordinance are provisions for monitoring, evaluating land use and building decisions, and enforcement to maintain acceptable noise levels.

The importance of the noise element in overall planning cannot be overstated. The development of sound planning regarding the community noise environment ensures protection for both noise producers and activities sensitive to excessive noise. The development of noise standards is not

designed to restrict noise producers, such as industrial plants or transportation modes, but to ensure that noise producers enhance, rather than inhibit, the overall development of the community.

LIST OF APPENDICES

N-1) Procedures for the Development of Noise Contours (2 pages).

N-2) Noise Contour Map and Noise Sensitive Areas.

N-3) Nomograph for approximate Prediction of Highway Noise Levels: Interstate 5.

N-4) Nomograph for Approximate Prediction of Highway Noise Levels: State Highway 97.

N-5) Estimated Distance (in feet) to Railroad Noise Contours, Siskiyou County, 1978.

N-6) Land Use Compatibility for Exterior Community Noise.

N-7) Suggested Interior Noise Levels Considered Compatible for Various Uses.

APPENDIX N-1

PROCEDURES FOR THE DEVELOPMENT OF NOISE CONTOURS

Noise contours were developed for current noise levels for railroad and highway sources of noise in the City of Weed.

INTERSTATE AND STATE HIGHWAYS

Noise contours were developed for highways (which includes Weed Boulevard) in the Weed planning area utilizing traffic counts obtained from the California Department of Transportation (CALTRANS), percentage of trucks data obtained from the State Department of Agriculture agricultural inspection stations, and a nomograph provided by the State Department of Health Services, Office of Noise Control.

Peak hour traffic counts were obtained from the 1985 Traffic Volumes published by CALTRANS. 1985 figures are assumed to represent current volumes.

Data on the percentage of all vehicles that are diesel trucks was obtained from counts maintained by the agricultural inspection stations in Dorris and Hornbrook.

Utilizing peak hourly traffic volume, percentage of trucks, and assuming 60 MPH average vehicle speed for highways 5 and 97 the nomographs contained in Appendices N-3 and N-4 can be completed.

Once the nomographs are completed, L10 dBA noise levels at specific distances can be determined. Contours for 60 Ldn, 65 Ldn, or 70 Ldn can be developed from the information contained in the nomograph by reducing the L10 dBA contours by 3 dBA. For example, a review of the Interstate 5 nomograph indicates that the current 73 L10 dBA contour is located approximately 270 feet from the freeway centerline. Since a reduction in the L10 dBA contours of 3 dB will approximate the Ldn contour, the distance also corresponds to the current 70 dBA Ldn contour.

SOUTHERN PACIFIC RAILROAD

Appendix N-5 contains a table obtained from the Siskiyou County Noise Element which contains distances to various noise contours around the Weed-Oregon via Montague railroad segment. This table was developed utilizing the following information: 2 day and 2 night operations on the Weed-

Oregon via Montague segment. 1986 and for the foreseeable future SP railroad operations are the same as those contained in the Siskiyou County Noise Element (David VanHeest, SP Railroad, Dunsmuir, 9/23/86, personal communication). Therefore, the table contained in Appendix N-5 is accurate for current and projected SP railroad operations.

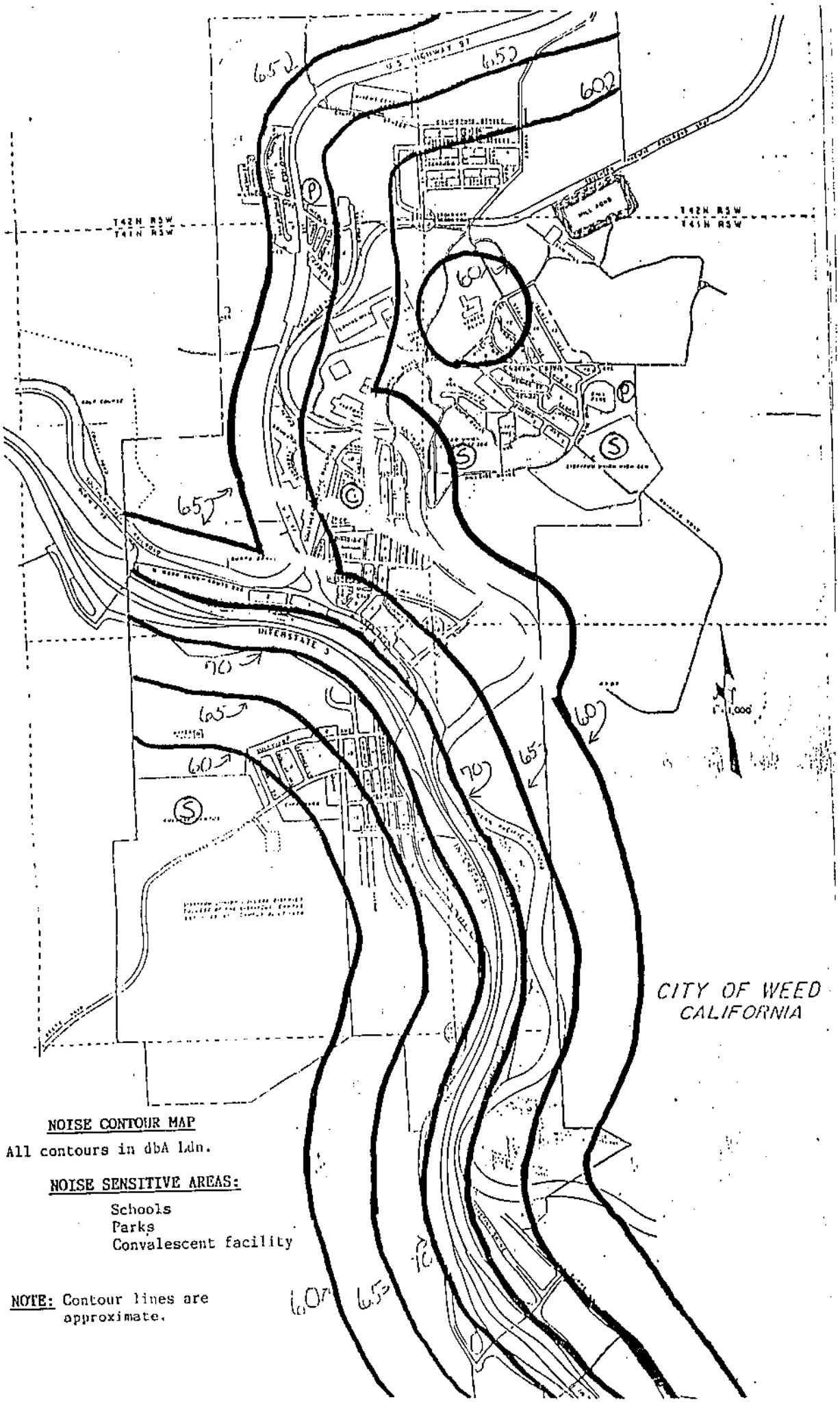
The procedure utilized in determining railroad noise levels in the Siskiyou County Noise Element is that contained in SIMPLIFIED PROCEDURE FOR DEVELOPMENT RAILROAD NOISE EXPOSURE CONTOURS by Jack W. Swing, Sound and Vibration Magazine, February, 1975.

PROJECTED NOISE LEVELS

A review of Appendix N-2 illustrates that some of the noise sources overlap each other. This makes the development of noise contours a difficult exercise. The noise contours developed in Appendix N-2 are conservative, that is they do not assume the noise amplification inherent in overlapping noise sources.

In addition, the development of projected noise sources is very difficult in the planning area. This is due to the fact that the railroad and highway noise contours overlap in much of the planning area. Therefore, the development of projected noise sources is not indicated on the map contained as Appendix N-2.

APPENDIX N-2) Noise Contour Map and Noise Sensitive Areas.



NOISE CONTOUR MAP

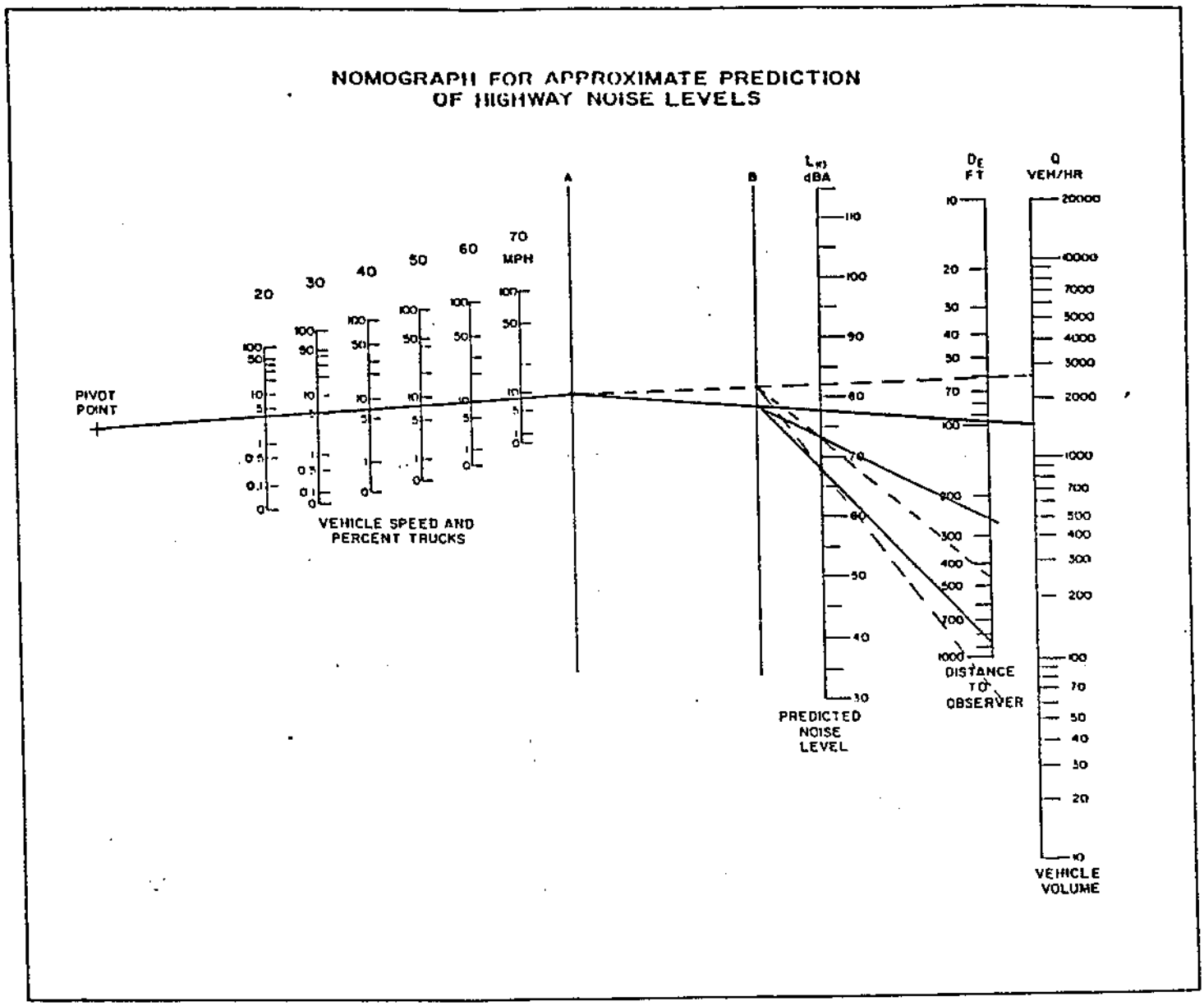
All contours in dbA Ldn.

NOISE SENSITIVE AREAS:

Schools
Parks
Convalescent facility

NOTE: Contour lines are approximate.

APPENDIX N-3) Nomograph for approximate Prediction of Highway Noise Levels: Interstate 5.



INTERSTATE 5: CURRENT AND PROJECTED NOISE LEVELS

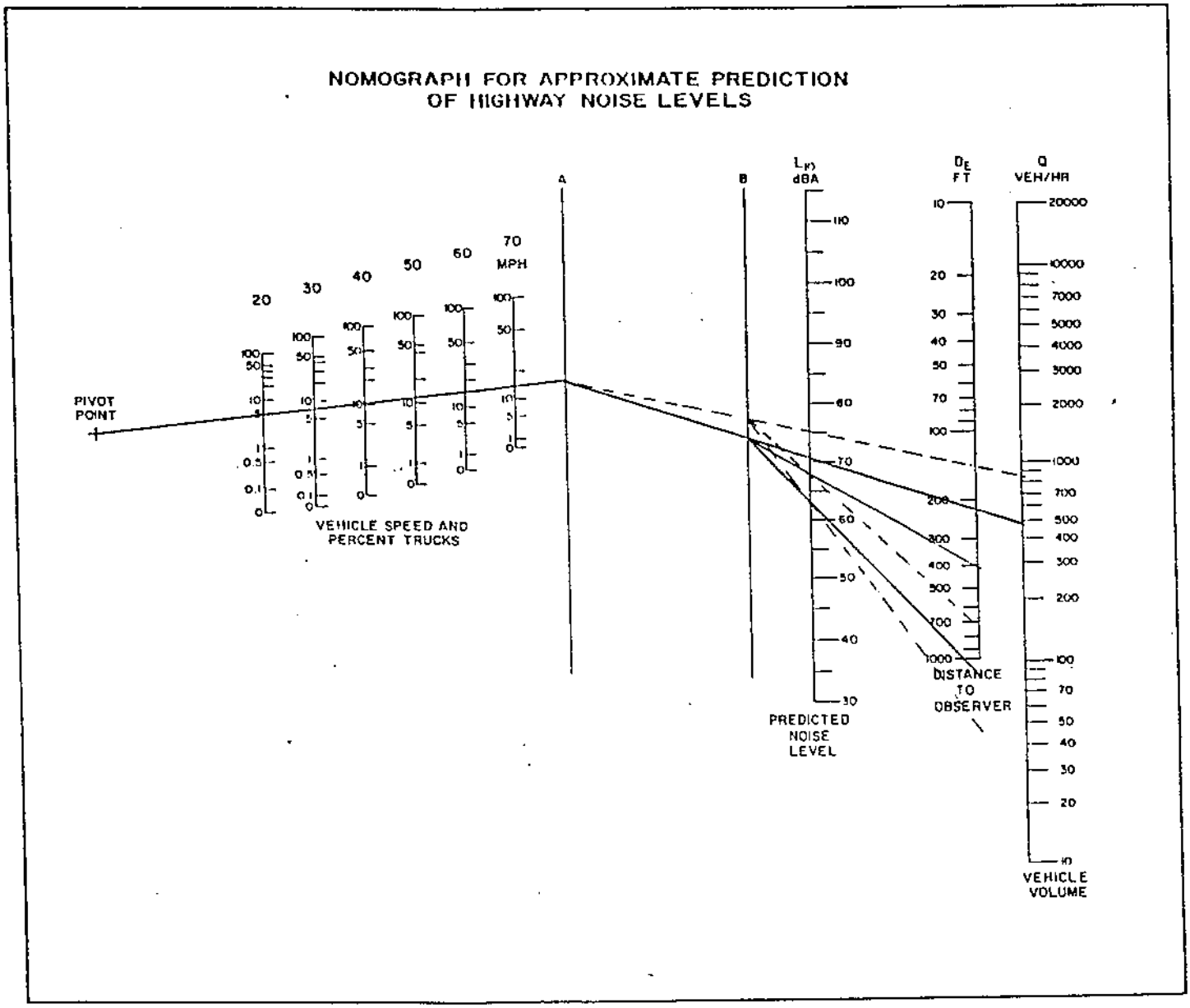
-Current (1985) ———

-Projected (2000) - - - - - -

DISTANCE TO NOISE CONTOURS (1985):

60 dbA Ldn = 1,740 feet
65 dbA Ldn = 880 feet
70 dbA Ldn = 270 feet

APPENDIX N-4) Nomograph for Approximate Prediction of Highway Noise Levels: State Highway 97.



STATE HIGHWAY 97: CURRENT AND PROJECT NOISE LEVELS

-Current (9185) ————

-Projected (2000) - - - - - -

DISTANCE TO NOISE CONTOURS (1985):

60 dbA Ldn = 1,200 feet
65 dbA Ldn = 400 feet
70 dbA Ldn = 175 feet

APPENDIX N-5) Estimated Distance (in feet) to Railroad Noise Contours, Siskiyou County, 1978.

TABLE A-11: ESTIMATED DISTANCE (IN FEET) TO RAILROAD NOISE CONTOURS, SISKIYOU COUNTY, 1978. *

Railroad and Segment	Decibels (db (A)) in Ldn 75	70	65	60
Southern Pacific				
Shasta County - Weed		340	625	1,140
Weed - Oregon via Macdoel	190	370	640	1,250
Weed - Montague		125	270	475
Montague - Oregon			170	320
McCloud River				
McCloud - Mt. Shasta City		125	270	480
McCloud		170	335	600

* Note: Since railroad equivalent operations are the same in 1985 and into the foreseeable as they were in 1978, current and projected noise contours are equivalent.

SOURCE: Siskiyou County Noise Element (1978)

APPENDIX N-6) Land Use Compatibility for Exterior Community Noise.

LAND USE COMPATIBILITY FOR EXTERIOR COMMUNITY NOISE*

LAND USE CATEGORY	Noise Ranges (Ldn) 1	2	3	4
Auditoriums, concert halls, amphitheaters, music halls Passively-used open space (quiet or contemplation areas of public parks)	50	50-55	55-70	70
Residential. All dwellings including single-family, multi-family, group quarters, mobile homes, etc. Transient lodging, hotels, motels. School classrooms, libraries, churches. Hospitals, convalescent homes, etc. Actively utilized playgrounds, neighborhood parks, golf courses.	60	60-65	65-75	75
Office buildings, personal business and professional services. Light commercial. Retail, movie theaters, restaurants. Heavy commercial. Wholesale, industrial, manufacturing, utilities, etc.	65	65-70	70-75	75

Noise Range 1

Acceptable land use. No special noise insulation or noise abatement requirements unless the proposed development is itself considered a source of incompatible noise for a nearby land use (i.e., an industry locating next to residential uses).

Noise Range 2

New construction or development allowed only after necessary noise-abatement features are included in design. Noise studies may be required if the proposed development is itself considered a source of incompatible noise for a nearby land use.

Noise Range 3

New construction or development should generally be avoided unless a detailed analysis of noise reduction requirements is completed and needed noise abatement features included in design.

Noise Range 4

New construction or development generally not allowed.

* SOURCE: SISKIYOU COUNTY NOISE ELEMENT

APPENDIX N-7) Suggested Interior Noise Levels Considered Compatible for Various Uses.

SUGGESTED INTERIOR NOISE LEVELS (Ldn)

CONSIDERED COMPATIBLE FOR VARIOUS USES

USE	Ldn	BASIS FOR CRITERIA
RESIDENTIAL	45	Undisturbed Sleep and State Law (Cal Admin. Code, Title 25, Ch. 1, Subch. 1, Art. 4, Sect. 1092)
COMMERCIAL		
Hotel-Motel	45	Undisturbed Sleep and State Law (Cal Admin. Code, Title 25, Ch. 1, Subch. 1, Art. 4, Sect. 1092)
Executive Offices, Conference Rooms	55	Speech communication - 3.5 meters - normal voice
Staff Offices	60	Speech communication - 2 meters - normal voice
Restaurant, Markets, Retail Stores	60	Speech communication - 2 meters - normal voice
Sales, Secretarial	65	Speech communication - 1 meter - normal voice
Sports Arena, Bowling Alley, etc.	70	Speech communication - 0.7 meters or 2.25 feet-raised voice
INDUSTRIAL		
Offices (same as above)	55-60	
Laboratory	60	Speech communication - 2 meters - normal voice
Machine Shop, Assembly, & Others	70	Speech communication - 0.7 meters - raised voice
PUBLIC OR SEMI-PUBLIC FACILITY		
Concert Hall & Legitimate Theater	30	Intrusion of noise may spoil artistic effect
Auditorium, Movie Theater & Church	45	Minimize intrusion into artistic performance and speech communication - 20 meters - raised voice
Hospital, Nursing Home & Firehouse (sleeping quarters	45	Undisturbed Sleep
School Classroom	50	Speech communication - 6 meters - normal voice & State law (Cal. Streets & Highways Code, Sect. 216)
Library	50	Minimize interruption of reading
Other	55	Speech communication - 3.5 meters - normal voice

Source: Draft Noise Element, Santa Cruz County, California (August, 1977), page 18.